

**DESCRIPTION OF THE FEMALE OF
NOMADA DREISBACHORUM MOALIF
(HYMENOPTERA: APOIDEA: NOMADINAE)**

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Abstract.—The female of the cleptoparasitic bee *Nomada* (*Pachynomada*) *dreisbachorum* Moalif is described for the first time, on the basis of specimens collected in the Distrito Federal of Mexico in October and November, 1991.

Key Words.—Insecta, Hymenoptera, Apoidea, Nomadinae, *vincta* group, *Nomada dreisbachorum*

In 1988, a revision (Broemeling & Moalif 1988) of the species of the subgenus *Pachynomada* Rodeck, a monophyletic group within the genus *Nomada* Scopoli (equivalent to the *vincta* species group sensu Alexander 1994), was published that recognized fourteen species and subspecies, five of them new. For four of these fourteen species, only one sex is currently known: the female only for *N. saltillo* Broemeling and *N. vitticollis* Cresson, the male only for *N. tepoztlan* Moalif and *N. dreisbachorum* Moalif.

Broemeling and Moalif's revision shows that the *vincta* group has its greatest diversity in Mexico. Over the past two years, a survey of the wild bee fauna of Mexico has been underway, supported by the U.S. National Science Foundation and the Instituto de Biología, Universidad Nacional Autónoma de México (UNAM). A collecting trip through parts of the Altiplano and coastal Veracruz in the late autumn of 1991 (described in Griswold 1992) turned up a modest series of *Nomada dreisbachorum* that included nine female specimens. Because no further representatives of any species of the *vincta* group have been collected in any of the three other expeditions funded by this grant, and the recent revision by Broemeling and Moalif was based upon a comprehensive survey of the material that was already available in collections, a description of the hitherto undescribed female of *Nomada dreisbachorum* is presented below. Format and terminology follow that of Broemeling & Moalif (1988); abbreviations S and T refer to metasomal sternum and tergum, respectively. All measurements are presented as arithmetic mean, with range in parentheses. Specimens are deposited in the collections of the Instituto de Biología at UNAM, the Bee Biology and Systematics Laboratory at Utah State University, and the Snow Entomological Museum at the University of Kansas.

NOMADA DREISBACHORUM MOALIF

Nomada (*Pachynomada*) *dreisbachorum* Moalif, in Broemeling & Moalif, 1988. Pan-Pacif. Entomol., 64: 222. male.

Types.—Holotype, male; data: "Amecameca, Mex. 9-25-57, R. & K. Dreisbach"; deposited: Michigan State University, East Lansing, Michigan. Paratypes:

same data as holotype, 4 males; deposited: 3 at Michigan State University, 1 at Bee Biology & Systematics Laboratory, Utah State University, Logan, Utah (examined October, 1993). Type depositories are as reported in Broemeling & Moalif (1988), but holotype and 3 paratypes could not be found at Michigan State University in October, 1993 (Virginia Scott, personal communication).

Male.—Described in detail in Broemeling & Moalif (1988).

Female.—Body length 11.2 mm (10.4–12.4); forewing length, measured from base of costal vein to apex of marginal cell, 8.8 mm (8.5–9.2); hindwing length, measured from base of vein Sc+R to base of vein Rs, 4.7 mm (4.3–5.0); antennal scape cylindrical, not swollen, anterior face covered with shallow, flattened punctures, integument between punctures dull, coarsely shagreened; head densely covered with round, shallow punctures separated by less than a puncture diameter except on apical one-half of clypeus and malar area, where spacing is more irregular and sparser; integument between punctures dull and coarsely roughened except on apical one-half of clypeus and malar area, where it is smooth and polished; ocellular distance 0.43 mm (0.42–0.50); mid-lateral ocellar distance 0.14 mm (0.12–0.14); mid-ocellar occipital margin distance 0.48 mm (0.44–0.54); mid-ocellar diameter 0.23 mm (0.22–0.26); interocellar distance 0.38 mm (0.36–0.38); paraocular “carina” weakly expressed, but surface between anterolateral corners of clypeus and inner margin of compound eye angulate rather than evenly convex; labrum with irregular coarse, shallow punctures, integument between punctures smooth and polished, apex produced into thick, prominent protuberance; acetabular carina of mandible less prominent than in male, mandible otherwise as in male; pronotal collar narrow mesally, lateral portion of collar rounded when viewed from front, but angulate along crest of curve; scutum very densely punctate, punctures deep and contiguous, integument dull and rough, vestiture a mixture of sparsely distributed setae that are erect, flexible, weakly plumose, pale yellow, about as long as second flagellomere; and somewhat denser layer of very short, simple, recumbent setae (vestiture of scutum most apparent in oblique lateral view, scarcely discernible in dorsal view); scutellum with discernible dorsal and posterior faces, but evenly rounded in profile, median longitudinal depression very weak or absent, punctation and vestiture as on scutum; sides of propodeum with distinct, shallow punctures irregularly spaced, ranging from contiguous to separated by 1 or 2 puncture diameters, integument between punctures rugulose or shagreened; vestiture resembles erect setae of scutum, with no understory of short, recumbent setae; propodeal triangle bare, with prominent longitudinal rugae on basal third (adjacent to metanotum), grading into apical one-half that is impunctate and weakly shagreened; metapleuron dorsally with sculpturing and vestiture as on sides of propodeum, but ventrally impunctate, shiny, only slightly roughened, setae very short and fine, weakly plumose; mesopleuron with vestiture and sculpturing similar to sides of propodeum, but punctures slightly larger and more evenly spaced; procoxal spine rudiment strongly developed; apex of hind tibia with 5–8 long, thin, somewhat dorsoventrally compressed bristles, each tapering to sharp point, these bristles about as long as surrounding plumose setae, but much broader at base and ferruginous rather than pale yellow; hind basitarsus not distinctly widened medially, anterior and posterior margins essentially parallel; forewing with 2 submarginal cells of roughly equal size (1 specimen has short remnant of second transverse cubital vein in 1 wing); wings weakly infumate throughout, more strongly clouded along principal longitudinal veins, within apical one-half of marginal cell, and along apex of forewing. S5, T5, S6 of typical form for female *Nomada* (see Alexander 1994: 179). COLOR: integument primarily black except mandibles dark red-brown near apex; ocelli, tibial spurs, and apex of distalmost antennal segment brown-yellow; and the following maculations yellow: irregular spot of variable size near apical margin of clypeus; narrow lines along inner margin of compound eye and in malar space; small spot on mandibular acetabulum (3 specimens) or on outer face of mandible about midway between base and apex (1 specimen); lateral angles of pronotal collar; pronotal lobes; tegulae in part; an irregular yellow strip on ventral one-half of mesopleuron (absent on 2 specimens, reduced to small spots on 1 specimen); 2 spots on scutellum; mesal part of metanotum (extending onto scutellum on 7 specimens); narrow transverse median bands on T1–5, first 2 or 3 terga with band extending anteriorly on each side to create a U-shaped maculation; large median patches on S1–3, small lateral spots on S4 and S5.

Discussion.—The male of this species, characterized by Broemeling and Moalif as “the furthest [sic] from the norm of *Pachynomada*,” is easily recognized by a

suite of diagnostic characters. The nine female specimens collected at the same time and place as twelve males can be readily assigned to the same species by the following combination of characters that Broemeling and Moalif identified as diagnostic: dull, shagreened interpunctural surface of the head, 2 submarginal cells (due to loss of second transverse cubital vein), body black with greatly reduced yellow markings, pro-coxal spine rudiment strong, hind basitarsus only slightly (if at all) expanded medially. The last character listed is of some note because one of the characters that has been considered diagnostic for the *vincta* group is a hind basitarsus that is "expanded medially" (Broemeling & Moalif 1988) or "somewhat swollen and widest near the middle" (Snelling 1986). This is a subtle character at best, and scarcely discernible in *Nomada dreisbachorum*.

As usual in *Nomada*, the bristles at the apex of the hind tibia are somewhat more robust and deeply pigmented in females than in males of *Nomada dreisbachorum*. Broemeling & Moalif's (1988) description refers to "[yellow] patches on sterna 1–3." The new specimens (of both sexes) examined for this paper have large median yellow maculations on S1–3 and small lateral spots on S4 and S5, with the latter absent, or possibly hidden, in 3 specimens.

Material Examined.—Paratype, male, from Utah State University collection (see Types). MEXICO. *DISTRITO FEDERAL*: 6 km SW of Milpa Alta, 28 Oct 1991, 2600 m, "wooded area just after cactus gardens", F. Nogueira, 1 female; 13 km SW of Milpa Alta, 28 Oct 1991, 2700 m, "steep field above *Salvia* patches, bee hive in quarry," R. Ayala, A. Rodriguez, 5 males; 13 km SW of Milpa Alta, 28 Oct 1991, 2700 m, T. Griswold, 5 males, 6 females; 6 km SW of Milpa Alta, 12 Nov 1991, 2600 m, "wooded area after cactus gardens," R. Ayala, A. Rodriguez, F. Nogueira, 2 females, 2 males.

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